

Claims:

1 1. A method for enhancing launch and in-flight integrity of
2 a reactive composite projectile, comprising the steps of:

3 providing a reactive composite material in a solid
4 shape; and

5 encasing the solid shape in an encasement material that
6 applies a compressive force to the solid shape.

1 2. A method according to claim 1 wherein said encasement
2 material is tape and wherein said step of encasing comprises
3 the steps of:

4 applying a tensile force to said tape; and

5 wrapping said tape about said solid shape while said
6 tensile force is being applied.

1 3. A method according to claim 2 wherein said tape is made
2 from a material that chemically reacts with the reactive
3 composite material when the solid shape strikes a target.

1 4. A method according to claim 2 wherein said tape is made
2 from a material that is inert with respect to the reactive
3 composite material when the solid shape strikes a target.

1 5. A method according to claim 1 wherein said encasement
2 material is a polymeric material and said step of encasing
3 comprises the steps of:

4 coating the solid shape with a liquified form of the
5 polymeric material; and

6 curing the liquified form of the polymeric material so-
7 coated on the solid shape wherein the polymeric material
8 shrinks to thereby apply said compressive force to the solid
9 shape.

1 6. A method according to claim 1 wherein said encasement
2 material is a polymeric material and said step of encasing
3 comprises the steps of:

4 extruding a flexible solid form of the polymeric
5 material over the solid shape; and

6 curing the flexible solid form of the polymeric
7 material so-extruded over the solid shape wherein the
8 polymeric material shrinks to thereby apply said compressive
9 force to the solid shape.

1 7. A reactive composite projectile, comprising:

2 a reactive composite material in a solid shape; and

3 an encasement material applied to and surrounding said
4 solid shape for exerting compressive forces thereon.

1 8. A reactive composite projectile as in claim 7 wherein
2 said encasement material comprises tape wrapped under tension
3 onto said solid shape.

1 9. A reactive composite projectile as in claim 8 wherein
2 said tape is made from a material that chemically reacts with
3 said reactive composite material when the solid shape strikes
4 a target.

1 10. A reactive composite projectile as in claim 8 wherein
2 said tape is made from a material that is inert with respect
3 to said reactive composite material when the solid shape
4 strikes a target.

1 11. A reactive composite projectile as in claim 7 wherein
2 said encasement material is a polymeric material shrink cured
3 onto said solid shape.

1 12. A reactive composite projectile as in claim 7 further
2 comprising an elongate structure positioned in said solid
3 shape, said elongate structure made from a material having a
4 mass density that is approximately 2 to 10 times said mass
5 density of said reactive composite material.

1 13. A reactive composite projectile as in claim 12 wherein
2 said elongate structure comprises a plurality of fins
3 extending radially outward from an elongate core.

1 14. A reactive composite projectile as in claim 12 wherein
2 said elongate structure comprises a one-piece structure that
3 defines a plurality of elongate fins extending radially
4 outward from an elongate core.

1 15. A reactive composite projectile as in claim 12 wherein
2 said elongate structure comprises an assembly that, when
3 assembled, defines a plurality of elongate fins extending
4 radially outward from an elongate core.

1 16. A reactive composite projectile as in claim 12 wherein
2 said elongate structure comprises an externally threaded rod.

1 17. A reactive composite projectile as in claim 12 wherein
2 said elongate structure comprises a plurality of elongate
3 rods.

1 18. A reactive composite projectile as in claim 17 wherein
2 said plurality of elongate rods are bundled together.

1 19. A reactive composite projectile as in claim 12 wherein
2 said elongate structure is made from a material selected from
3 the group consisting of metals and ceramics.

1 20. A reactive composite projectile as in claim 7 wherein
2 said solid shape comprises a cylinder.

1 21. A reactive composite projectile as in claim 7 wherein
2 said solid shape comprises a sphere.

1 22. A reactive composite projectile as in claim 7 wherein
2 said solid shape comprises a cube.

1 23. A reactive composite projectile, comprising:

2 a reactive composite material in a solid shape, said
3 reactive composite material having a mass density; and

4 an elongate structure positioned in said solid shape,
5 said elongate structure made from a material having a mass
6 density that is approximately 2 to 10 times said mass density
7 of said reactive composite material.

1 24. A reactive composite projectile as in claim 23 wherein
2 said elongate structure comprises a plurality of fins
3 extending radially outward from an elongate core.

1 25. A reactive composite projectile as in claim 23 wherein
2 said elongate structure comprises a one-piece structure that
3 defines a plurality of elongate fins extending radially
4 outward from an elongate core.

1 26. A reactive composite projectile as in claim 23 wherein
2 said elongate structure comprises an assembly that, when
3 assembled, defines a plurality of elongate fins extending
4 radially outward from an elongate core.

1 27. A reactive composite projectile as in claim 23 wherein
2 said elongate structure comprises an externally threaded rod.

1 28. A reactive composite projectile as in claim 23 wherein
2 said elongate structure comprises a plurality of elongate
3 rods.

1 29. A reactive composite projectile as in claim 28 wherein
2 said plurality of elongate rods are bundled together.

1 30. A reactive composite projectile as in claim 23 wherein
2 said solid shape comprises a cylinder.

1 31. A reactive composite projectile as in claim 23 wherein
2 said solid shape comprises a sphere.

1 32. A reactive composite projectile as in claim 23 wherein
2 said solid shape comprises a cube.

1 33. A reactive composite projectile as in claim 23 wherein
2 said elongate structure is made from a material selected from
3 the group consisting of metals and ceramics.

1 34. A reactive composite projectile, comprising:

2 a reactive composite material in a solid shape, said
3 reactive composite material having a mass density; and

4 an elongate structure positioned in a central portion
5 of said solid shape, said elongate structure made from a
6 material having a mass density that is approximately 2 to 10
7 times said mass density of said reactive composite material,
8 said elongate structure having an elongate core with fin-like
9 protuberances extending radially outward from said elongate
10 core into said solid shape.

1 35. A reactive composite projectile as in claim 34 wherein
2 said elongate structure comprises a one-piece structure.

1 36. A reactive composite projectile as in claim 34 wherein
2 said elongate structure comprises a multiple-piece assembly.

1 37. A reactive composite projectile as in claim 34 wherein
2 said fin-like protuberances extend longitudinally along said
3 elongate core.

1 38. A reactive composite projectile as in claim 34 wherein
2 said fin-like protuberances comprise threads.

1 39. A reactive composite projectile as in claim 34 wherein
2 said solid shape comprises a cylinder.

1 40. A reactive composite projectile as in claim 34 wherein
2 said solid shape comprises a sphere.

1 41. A reactive composite projectile as in claim 34 wherein
2 said solid shape comprises a cube.

1 42. A reactive composite projectile as in claim 34 further
2 comprising an encasement material applied to and surrounding
3 said solid shape for exerting compressive forces thereon.

1 43. A reactive composite projectile as in claim 42 wherein
2 said encasement material comprises tape wrapped under tension
3 onto said solid shape.

1 44. A reactive composite projectile as in claim 43 wherein
2 said tape is made from a material that chemically reacts with
3 said reactive composite material when the solid shape strikes
4 a target.

1 45. A reactive composite projectile as in claim 43 wherein
2 said tape is made from a material that is inert with respect
3 to said reactive composite material when the solid shape
4 strikes a target.

1 46. A reactive composite projectile as in claim 42 wherein
2 said encasement material is a polymeric material shrink cured
3 onto said solid shape.

1 47. A reactive composite projectile as in claim 34 wherein
2 said elongate structure is made from a material selected from
3 the group consisting of metals and ceramics.